Technology Assessment Working Group Reactivation

Background

- TAWG was originally assigned to Larry Zeigenfuss as an Action Item from a previous TST meeting.
- TA WG was constituted with the following members:
  - Roger Avant - Headquarters
  - J.R. Hill - LaRC
  - David Hoffman - GRC
  - Loren Lemmerman - JPL
  - Vicki Zanoni - Stennis
  - Jim Gatlin - GSFC
  - Walt Brooks - Ames
  - Tom Stanley - Stennis
  - Hugh Christian - MSFC
- TAWG conducted several telecons and 'completed' its mission in June 2000.

Today's objective

- Review / refine or reaffirm original charter
- Review conclusions from June, 2000
- Propose plan for moving forward
- Agree on products to be delivered

TAWG Original Charter

- The purpose of this process is "to allow the development team to make a definitive case for technology readiness when requesting AA authorization to proceed from "pre-formulation" to "formulation" phase under the HOWI Y003B".
- The process must assess the technology readiness level in relevant terms for all potential sources and acquisition approaches related to the proposed science data buy. This technology readiness assessment must trace to the data specification and address both the functional ("can something be done?") and performance ("how well can it be done") aspects of the technology.

- Implications / interpretation
  - This implies a process to be followed by development teams
  - This suggests common lexicon for technology readiness to be used throughout Code Y
  - This suggests accessibility and references to SOA technologies

  - IT IS ASSUMED that ATP can be granted before all technology issues are fully resolved

  - Resulting tools/ processes to be ??REQUIRED?? by both development teams and also by evaluation teams

TAWG I Conclusions

- 5 steps defined in the overarching technology assessment process
  - 1. Identify the driving technology for obtaining the measurement, i.e. meeting the data specification.
  - 2. Conduct technology inventory (who is developing it and status thereof)

Steps 3 - 5 below are conducted for each identified source for the technology

  - 3. Utilize experts in the field to assess the current status of the technology.
  - 4. Assess risk associated with the continued development of the technology to TRL 8.
  - 5. Identify risk mitigation / management techniques.

TAWG I Conclusions

Key Points

- Step 1. ID critical technologies. No comments
- Step 2. Conduct technology inventory
  - Premised on paradigm "Enterprise needs drive technology development and technology availability enables missions"
  - at least one source of the driving technology is known at this stage[preformulation].
  - Approaches for identifying alternate sources could include release of a RFI and/or an internet search. A formal/informal network that would enable the identification of all sources (NASA, OGA, industry, academia) would be the ideal solution. Does anything like that exist?
  - Existing databases are inadequate
    - Agency specific
    - Nonuniform nomenclatures
    - Missing metrics
- Step 3. Use experts to assess...
  - A common scale should be used for determining the TRL of the technology for each potential source or acquisition approach
  - this assessment should examine the entire mission system and how the technology impacts system level factors such as cost, risk, schedule, RMA, commercialization, etc

TAWG I Conclusions
Key Points

- **Step 3. (cont'd)**
  - **Special attention should be paid to the assessment of the readiness level for software technology**
  - **software [must] reflect high fidelity to the target environment from functional, performance and architecture perspectives**
  - **Appropriate tools should be identified and applied to facilitate the management of these activities.**

- **Step 4. Assess risk…**
  - **Identify each step or action (milestones) that must take place during this development.**
  - **The TRL definitions and required "objective evidence" that signifies the advancement from the lower TRL to the next level should be used to lay out a plan**
  - **An attempt should be made to quantify, or at least qualify the risk of each step**

TAWG I Conclusions
Key Points

- **Step 5. Identify risk mitigation…**
  - **Establish schedule and funding contingency as well as milestones with exit points aligned to key deliverables.**
  - **Ensure continuous feedback between technology developers and the mission team in order to keep both the technology aligned with the mission as it evolves**
  - **Contingency plans should be made to address what will be done if problems arise as the technology advances.**

TAWG I Closure Items??

- **Existing databases are inadequate**
  - **Agency specific**
  - **Nonuniform nomenclatures**
  - **Missing metrics**
- **Appropriate tools should be identified and applied to facilitate the management of these [software] activities.**

- **Plus…**

- **An open recommendation from Jim Gatlin --never addressed--**
  - **A case study to see how the Technology Assessment was handled. Candidates:**
    - **Triana**
    - **GIFTS**

Recommendation

- Form New Group around the following products
  - Risk management
  - Hardware assessment metrics
  - Software assessment metrics
  - Case studies
  - Development of interagency steering group for flight project proposal assessment
- Products??
  - Risk management plan
  - Hardware metrics definition
  - Software metrics definition
  - Case study reports
  - Recommendation of interagency team composition
  - Final recommendation report
- Schedule??
  - Case study briefings next TST
  - Metrics briefings next TST
  - Final recommendation report next TST + 1